REMARKS

The Examiner rejects Claims 1 – 18 in view of EPO '186 combined with either Namie or Haraikawa.

As an initial matter, the cited references do not disclose any construction guiding a coil spring and a check valve plate by a nut and a bolt having centering function.

EPO '186 discloses a ported disc variable orifice bleed circuit. The invention is directed to problems associated with controlling the flow of hydraulic fluid in a shock absorber under low piston speed conditions. The basic problem is that prior art devices included a disc which would move to expose an orifice area for flow of hydraulic fluid. However, the area exposed to fluid flow was difficult to control under low speed conditions, because even small deflections of the relatively large diameter variable orifice bleed discs resulted in a rapid increase in the flow area of the bleed orifice. The cited reference teaches a series of discs having tuned orifices which sequentially open to more closely control the flow of fluid at low piston speeds. Particularly, orifices 108 are tuned by sizing them to control the velocity at which the midspeed circuit becomes active.

The fluid flow is closely controlled in the compression or rebound stroke, during the period when a load is applied to the device during low velocities of movement of the wheel sought to be damped.

The device is not a check valve, in contrast to the claimed check valve of the present invention.

There is no mention and no teaching whatsoever relating to the problem of a spring interacting against a surface when rotated. One skilled in the art of assembling spring-actuated check valve structures in shock absorbers would not look to this low speed tuned orifice device when searching for a solution to the problem of springs being caught beneath a check valve plate upon rotation.

Namie discloses a tensioner which is used to apply a particular force to a timing belt or chain of an engine. These devices are useful to prevent a timing chain, or other belt or chain, from slipping off a timing gear, or other gear, due to too much slack in the chain or

belt. The cited reference is not even a hydraulic device. It is purely a mechanical device. This device cannot reasonably be utilized in any manner to contribute to the improved design of a hydraulic shock absorber, particularly a check valve. Applicant's device is in the field of active damping of a suspension component of a moving vehicle. The cited reference is in the field of chain tensioners for engines. The cited reference is not reasonably pertinent to the problem concerning the applicant, that is, to prevent an end of a coil spring from becoming caught beneath a dynamic disc of a fluid flow device. The structure is entirely different from the claimed invention physically, and in purpose. The structure of the cited reference could not be adapted for use in a hydraulic device, particularly a dynamic flow control device.

The cited reference has no fluid control elements, because there is no fluid flow. There are no discs under which a coil spring end may become caught. The machined bores of the cited reference contain no such elements. The problem addressed by Namie is correctly identified by the Examiner, that is, that the assembly may take place without grinding the coil spring end against the bore, thereby generating powders by the abrasive movements. The Examiner states that there would be expected benefits during assembly of the Namie device. These benefits are specifically set out in Namie. But, they are entirely different in nature from the benefits of the present invention. The interface of the Namie spring is with a static bore. There is no reasonable comparison between the structure of a static, dry blind bore and a thin movable hydraulic check valve element, structurally or functionally. There is no issue of alignment with a movable element. The Namie spring could not reasonably be adapted to be used in connection with a hydraulic device, or a check valve in a hydraulic device. Unlike the presently claimed invention, there is nothing in the Namie bore which the Namie spring could become caught under upon rotation. The specific Namie benefit of preventing grinding of powders by the spring end is entirely unrelated to the benefits of the present invention, whereby the misalignment of the spring with respect to a moving check valve is prevented. The mistake in the Examiner's analysis is the extrapolation of that problem to encompass the particular problem of the coil spring end becoming lodged beneath a (non-existent) fluid control element of the cited reference. The real problem with the spring lodging beneath a fluid control element is that the element would be stuck open, and would no longer control the fluid flow as intended. The expected benefits of the cited reference and the present invention are too widely separated to be fairly considered relevant to each other. That each device presents some benefit is not enough for them to

be considered relevant to each other, where the benefits are entirely non-analogous and unrelated.

Haraikawa discloses a mechanical disc brake arrangement having a threaded rod and a nut. The rod/nut arrangement may be rotated so as to act against a friction pad to adjust the initial clearance between the friction pad and the disc, thereby compensating for wear of the friction pad. Unintended rotation of the rod elements is undesirable because the initial clearance would be changed from the desired setting. To prevent such rotation, projections 21 and 22 are presented which engage the ends of the spring, 19c/19d, or at least wedge against surfaces 19a/19b, to prevent unintended relative rotation of the rod with respect to the spring retainer 17.

This structure is non-analogous art with respect to the presently claimed invention. The present invention has no structure which is to be prevented from unintentional rotation during operation. There is no structure which is to be abutted or wedged against a spring end to prevent relative rotation. To the contrary, the claimed invention is arranged specifically such that an end of the spring would ride over a spring contact surface of the check valve, preventing catching of the spring end against the check valve or being led from the spring side underneath to the opposite sealing side of the check valve.

On the check valve structure of the bottom, because a spring is guided by a nut and a bolt which have centering function, the spring rotates at the time of the assembly, but the rotation of the spring does not cause a leading end of the spring being caught with a check valve plate. Further, even if the check valve plate is in the caught situation with the leading end of the spring at the time of the assembly, the rotation of the spring releases the caught situation of the valve plate, so that the proper situation can be returned.

The Examiner previously states that the multiple references cited in the Namie case support the proposition that coil springs and threaded fasteners have a wide application in the mechanical arts, and therefore the cited art is relevant in this particular case.

In fact, of the nine US references cited in Namie, eight are for belt or chain tensioners, like the reference itself. The ninth reference is a device having a non-hydraulic button tensioner. These cited references do not demonstrate a wide application in the mechanical arts. Quite the contrary, these citations show a narrow application of the cited structure. These facts hardly support the proposition that one skilled in a particular art would look far

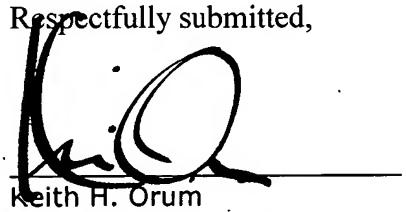
afield to consider art from other unrelated applications. It is simply not fair or correct to maintain that essentially all devices having coil springs and threaded fasteners would be considered relevant to one skilled in the art of hydraulic shock absorbers. To piece together the present invention from unrelated structures existing in the vast universe of threaded fasteners and coil springs is a classic case of having used the teaching of the inventor and hindsight to arrive at the presently claimed invention. There is simply no motivation to one skilled in the art of hydraulic shock absorbers for vehicle suspensions to look to the fields of chain tensioners and disc brakes when solving this hydraulic shock absorber problem.

The proposed amendments in the claims further distinguish the present invention from the cited references.

CONCLUSION

Applicant asserts that all of the objections have been obviated, and therefore respectfully requests withdrawal of the objections and an allowance of this application.

Respectfully submitted,



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